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Atty. Docket: 012720-27

Remarks

Claims 7-24 remain for consideration and were rejected by the Examiner.

Claim Rejections – 35 USC § 102 anticipation by Boyd et al.**1.0 General**

The Examiner rejected claims 7, 9, 10, 12 and 15 as being clearly anticipated by U.S. Patent No. 3,710,623 to Boyd et al. ("Boyd"). Boyd discloses a magnetic pickup element for reducing the nonlinear readout characteristics of magnetic sensing and measuring devices such as turbine flowmeters. The pickup element is mounted in a low permeability adapter that causes flux lines to be shaped into a path having a low flux density.

1.1 Independent claim 7

Claim 7 is directed towards a sensor that measures characteristics of a nearby, moving, electrically conductive object through an intervening barrier, where the barrier causes alternating magnetic fields to provide inadequate sensor performance. Claim 7 requires that the magnet be mounted "proximate to the barrier." (see claim 7, line 6). To the contrary, Boyd teaches providing a recess 32 in the barrier/body 12. (see Boyd col. 2, lines 57-61). The present invention negates the need to provide such a recess, which would weaken the barrier at the penetration. Weakening of the barrier is undesirable because of resulting degraded mechanical performance. (see Applicant's ¶

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5). The sensor of the present invention is therefore mounted proximate to the barrier, and not in a recess in the barrier.

Because Boyd does not include each and every element of claim 7, and teaches away from the present invention by suggesting a recess in the barrier, claim 7 is neither anticipated nor rendered obvious by Boyd.

1.2 Dependent Claims 9, 10, and 12

Claims 9, 10, and 12 depend either directly or indirectly from claim 7 and respectively add limitations thereto, and accordingly are allowable for the same reasons as claim 7. In addition, claims 10 and 12 are allowable because they require that the winding core rod be mounted to a pole of the cylindrical magnet *distal from the barrier*. This design is not taught or suggested in Boyd and these claims are therefore nonobvious.

1.3 Independent Claim 15

Claim 15 is directed towards a sensor that measures blade characteristics through a jet engine casing. As stated above in paragraph 3.1 with respect to claim 7, the present invention negates the need to provide a recess, which would weaken the casing at the penetration. Claim 15 requires that the magnet be mounted "proximate to the casing," not in a recess in the casing. (see claim 15, line 5).

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Because Boyd does not include each and every element of claim 15, and teaches away from the present invention by suggesting a recess in the casing, claim 15 is neither anticipated nor rendered obvious by Boyd.

***Claim Rejections – 35 USC § 103 obviousness in view of
Boyd et al. and "obvious design considerations"***

2.0 General

The Examiner rejected claims 8, 11, 13, 14, and 16-24 as being obvious in view of Boyd. Because claims 8, 11, 14, 16, 17-19, and 22-24 depend from claims that are allowable and respectively add limitations thereto, these claims are allowable. Additional reasons for allowing selected claims are provided below.

2.1 Dependent Claim 8

Claim 8 requires a magnet having a rectangular cross-section that is monodirectional. The configuration of a rectangular magnet differs from that of the magnet of Boyd, as the longitudinal axis of the rectangular magnet is generally parallel to the proximate barrier surface. (see ¶ 12). The operation of a rectangular magnet sensor, which is monodirectional, also differs from the magnet of Boyd.

"Monodirectional sensors produce S-shaped pulses as shown in FIG. 7, with a zero-crossing at point A approximately at the time of closest approach to the blade." (¶ 34).

Measurement capabilities and signal processing requirements differ between the monodirectional sensor of the present invention and the sensor disclosed in Boyd. The monodirectional magnet, which performs differently than that of Boyd, is neither taught

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nor suggested by Boyd and accordingly this design is not obvious to one of ordinary skill in the art.

2.2 Independent Claim 13

Claim 13 is directed to a sensor for measuring characteristics of moving turbine blade of a jet engine having a casing. The magnet is required to be mounted proximate to the casing. For the same reasons as set forth in 1.1 above for claim 7 with respect to mounting of the magnet, claim 13 is allowable.

Further, claim 13 requires the magnet to be rectangular and monodirectional. For the same reasons as set forth in 2.1 above for claim 8, claim 13 is allowable.

2.3 Dependent Claims 14 and 16

Claims 14 and 16 require specific materials for the magnet. Although Boyd recites a permanent magnet, recital of specific materials that are desirable for that sensor is not taught or suggested, and these claims are therefore nonobvious.

2.4 Dependent Claims 17, 19, 22, and 24

These claims require that the cylindrical rod winding core be mounted to a pole of the magnet *distal from the casing*. This design may provide improved performance over Boyd, depending on the application. This design is neither taught nor suggested by Boyd, which discloses only a rod between the magnet and the blade, and is therefore nonobvious.

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2.5 Independent Claim 20

Claim 20 is directed to a method of measuring characteristics of moving blades of a jet engine having a casing. The claim requires that the magnet be mounted proximate to the casing, and accordingly this claim is allowable for the same reasons as expressed in 1.1 above for claim 7. Further, the claim requires a rectangular magnet, and is allowable for the same reasons expressed in 2.1 above for claim 8.

2.6 Independent Claim 21

Claim 21 is directed to a method of measuring characteristics of moving blades of a jet engine having a casing. The claim requires that the magnet be mounted proximate to the casing, and accordingly this claim is allowable for the same reasons as expressed in 1.1 above.

If the Examiner has any questions about the present Reply or anticipates finally rejecting any claim of the present application, a telephone interview is respectfully requested.

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As the rejections entered by the Examiner in the Official Action dated March 28, 2003 have been shown to be inapplicable, reconsideration and allowance of claims 7-24, and passage of these claims to issue, is hereby respectfully requested.

Respectfully submitted,

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